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A study of Bayley test scores before and after infant stimulation programming

Prepared for the
Ministry of Community and Social Services
by A.R.A. Consultants

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Dear Readers:

We are pleased to present to you this report of a research study of the changes in the mental and physical development of infants, following infant development programming, as measured by the Bayley Scales of Infant Development.

Much of the information for this study was collected in the first phase of research on infant stimulation programs. The results of the first phase were reported in December, 1982 in the Survey of Infant Stimulation Programs in Ontario. While recognizing that a single scale provides limited information on program effectiveness, the systematic analysis of the available assessment data could, in a preliminary way, serve as an indicator of program impact.

We think you will find this report of interest and of value in considering which measures of infant functioning should be employed by service providers. The study confirms the need for a standardized, comprehensive, and reliable measure that can be used for both clinical and research pruposes.

Yours very truly,

John Burkus

John Burkus

1824 (4/82)

A STUDY OF BAYLEY TEST SCORES BEFORE AND AFTER INFANT STIMULATION PROGRAMMING

PREPARED FOR THE ONTARIO
MINISTRY OF COMMUNITY AND SOCIAL SERVICES
BY A.R.A CONSULTANTS, TORONTO

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PREFACE

This study of 348 Bayley assessments and 40 infant stimulation programs in Ontario was conducted for the Ministry of Community and Social Services by A.R.A. Consultants of Toronto. The study was made possible through the Provincial Lottery research funds allocated to the Ministry.

Planning and supervision of this study were the responsibility of a Steering Committee including the following members: Maria Berrera, Mary Kovacs, Walter Kushnir, Andy Lalonde, Pat McLaughlin, Faith Mills, David Pederson, Rosemary Proctor, Roma Scott, Fiore Sicoly and Maxine Walsh. The research team included John Renner and David Weiss.

In the course of the study, the directors, staff and sponsors of 40 programs were approached for information and insights. We thank them for willingly sharing their experience and knowledge with the research team, and consequently with programs throughout the Province.

EXECUTIVE SUMMARY

The purpose of the present study was to collect termination Bayley scores to assess the relationship between changes in Bayley Scores from intake to termination and select treatment variables. Program directors were contacted and asked to update information already collected in the Phase I study concerning termination Bayley scores. There was a substantial return rate (93%) and termination data for an additional 294 cases were collected.

This updated data resulted in a sample of 348 infants who had information on both pre- and post-test scores on the M.D.I. (Mental Development Index) of the Bayley tests, and 322 infants who had pre- and post-test scores on the P.D.I. (Physical Development Index) on the Bayley. The infants for which updated information was available appeared to be very similar in terms of reasons for termination and referral at termination as infants for whom this data was available for the Phase I study.

In general, infant scores on the post test of the Bayley tended to be similar to their scores on the pre-test. On both the M.D.I and the P.D.I., children with high initial pre-test scores tended to improve more than children with low initial pre-test scores.

In terms of differences in Bayley Scores according to diagnostic categories, environmentally at risk infants differed considerably from developmentally disabled children in terms of Bayley scores. The majority of environmentally at risk infants scored in the normal range or above on both indices, while the majority of the developmentally disabled children scored in the lowest categories.

In the absence of a control group, only limited data were available to determine the effects of treatment on Bayley change scores. Treatment-related variables such as age at admission to the program and whether an individual treatment plan was completed, were investigated but did not relate to gain scores. Frequency of home visits was only marginally related to gains in P.D.I. Bayley scores for children who are environmentally at risk.

This does not indicate that intensity of treatment is conclusively related to program impact since the gains may be due to other treatment variables that did not have sufficient data to be used in this study. In addition, because there were insufficient data to evaluate other treatment variables such as treatment approaches and duration of treatment the relationship of these variables to Bayley Scores could not be determined.

In terms of other variables that were related to changes in Bayley scores, Down's Syndrome children consistently had lower Bayley change scores for all infants. Further, infants who were terminated as rehabilitated because he or she achieved developmental norms appropriate to his or her age, or if the worker had decided that the child had improved sufficiently to be discharged, was consistently associated with higher Bayley change scores. This provides support for the termination decisions of the staff of infant stimulation programs.

The recommendations from this analysis were:

Recommendation 1: The Ministry's Program Supervisors should request that Program Directors maintain current Ministry policy of assessing infants at both intake and termination with Bayley tests.

Recommendation 2: Once additional treatment-related information such as treatment approaches and duration of treatment are collected, another research study similar to this analysis should be carried out to determine the impact of treatment-related variables on gains in Bayley scores.

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CHAPTER I - INTRODUCTION

BACKGROUND

This research is a follow-up to a large scale study conducted under the auspices of the Ministry of Community and Social Services entitled "Survey of Infant Stimulation Programs". This survey (referred to in this report as Phase I), was produced in 1982 and was inclusive of all active ministry-funded Infant Stimulation Programs across Ontario.

Data collection activities, which included intensive program director interviews and the review of 832 client files, amassed a large amount of information pertaining to program and client characteristics. Included among client-related data were infant scores as recorded from the Bayley Scales of Infant Development. Test scores were recorded for active and inactive cases, including scores at the intake level, and where available, at the case closure level.

In Phase I, the sample size of cases where both intake and termination level Bayley scores were recorded proved too small for any satisfactory analysis involving changes in Bayley scores that may have occurred over the course of program participation. In this study, data on termination Bayley Scores is updated, and multiple regression analyses are applied so that variables associated with changes in Bayley Scores may be identified.

In the context of Infant Stimulation Programs, Bayley Scales are administered to measure infant functioning, and as such, changes in Bayley Scores may provide insight into program effectiveness when analyzed against client and program variables identified during Phase I. This study also provides a rare opportunity to conduct in-depth analyses of Bayley change scores for a large population of infants exhibiting a wide range of environmental and developmental problems. The results should be of particular value to

research-oriented readers within the Ministry who have an interest in assessing the utility of universal Bayley Scale administration upon Infant Stimulation Program participants.

BAYLEY SCALES OF INFANT DEVELOPMENT

Bayley Scales of Infant Development are used to establish the current developmental status of infants in relation to other infants of the same age. They generate global indications of both mental and motoric competence, and are divided into two separate scores: The M.D.I. or Mental Developmental Index and the P.D.I. or Psycho-motor Developmental Index. Both index scores are standardized with an average or mean of 100, and a standard deviation of 16. Scores between 84 and 116 are considered within the normal range, whereas scores that lie above or below these points represent significant departures from the norm in either a negative or a positive direction.

Ministry guidelines for Infant Stimulation programs direct that Bayley Scales are used to test each enrolled infant, and that such an assessment is carried out at entry, intermediate and exit levels of the Infant's Program involvement. According to published reviews, the value of the Bayley for infant assessment is widely recognized among both clinicians and researchers, particularly for populations of "normal" infants. There are, however, some doubts raised as to the capacity of the Bayley to measure infant development of medically abnormal populations, especially low functioning infants.

RESEARCH ON THE BAYLEY

Researchers who have evaluated the Bayley are in general, favourably impressed and endorse its applications in both clinical and research contexts (see Collard, 1972; Holden, 1972; Yang and Bell, 1975; Damarin, 1978). The Bayley has been assessed as a well-standardized, carefully constructed, comprehensive and reliable measure of infant functioning.

Test-retest reliability and split - half reliability both demonstrate acceptably high values of correlation. Overall, the Bayley is rated superior to other familiar measures of infant functioning, including the Denver, Cattell and Gesell instruments (Yang and Bell, 1975; Collard, 1972).

The Bayley has, however, been designed and standardized for "normal" infant populations, and as such may be insufficiently sensitive to functioning of abnormal infants. One reviewer comments that the Bayley does not ....

> "help us to determine when and when not to use the instrument to gauge the progress of infants who are undergoing remedial treatment for particular developmental disabilities" (Damarin, 1978; P.207).

Doubts over the Bayley were also raised by some of the Infant Stimulation program directors during the data collection activities for Phase I. Their comments, which were unsolicited and incidental to the formal evaluation questions, suggested that for certain low functioning, biologically handicapped infants, Bayley Scales were incomplete as diagnostic tools.

A further issue concerning the potential for inconsistent administration and interpretation of the Bayley should be raised. As it is a comprehensive and complex instrument, the Bayley demands very skilled administration by an experienced examiner (Collard, 1972; Damarin, 1978). For the purposes of research, therefore, quality control over testing situations is particularly critical in order to hold confidence in the consistency and accuracy of test results. In the present study, such quality control of examiners cannot necessarily be presumed, since examiner expertise cannot be evaluated. There also exists the likelihood that different examiners administered pre and post program Bayleys which would add to inconsistencies.

PHASE I - BAYLEY RESULTS

In Phase I, intake levels M.D.I. scores indicated that 61% of the infants were below 85, and could be regarded as having serious problems in mental functioning. Similarly, 67% of the infants had P.D.I. scores of below 85, indicating serious motor problems.

The results of Bayley scores in Phase I showed highly significant differences among the diagnostic categories of infants who are designated as being at "high risk", "developmentally disabled", or "both". The environmentally at risk infant was defined operationally in this study as an infant whose parents showed evidence of one or more of the following:

- alcoholism, mother or father;
- psychiatric illness, mother or father;
- frequent parental separations;
- permanent parental separation;
- child neglect;
- child/sexual abuse: actual charges;
- child/sexual abuse: suspected;
- extended periods of unemployment;
- criminal history, mother or father;
- drug abuse, mother or father;
- developmental disability of parents or siblings (M.R. or borderline functioning)
- immature primary caregiver;
- single parent;
- provision of insufficient sustenance (i.e., poor accommodation, poor nutrition, poor medical attention);
- provision of insufficient play environment and play materials;
- insufficient parental responsivity, including poor parenting skills or knowledge.

The categories of "developmentally disabled" and "high risk" are not mutually exclusive. That is, an infant may have a clear diagnosis of

developmentally disabled" (for example, due to Down's Syndrome or cerebral palsy), and also be environmentally "at high risk" (e.g., living with immature parents having poor parenting skills or knowledge). A category labelled "both" was used to indicate an infant in this type of situation.

The largest differences on Bayley scores occurred between the high risk groups and the other two groups. M.D.I. scores of below 52 were seen in just 10% of the high risk group as compared to 39% and 32% of the developmentally disabled and "both" categories respectively. P.D.I. scores were similarly distributed: only 14% of the high risk group registering scores below 52, versus 48% for the developmentally disabled and 39% for both. Additionally, this pattern held true for the top end of the Bayley scales: the "high risk" M.D.I. and P.D.I. scores were consistently higher than those of the other two categories.

The differences noted above across the diagnostic categories support the validity of Bayley scores as measures of infant functioning, and thus suggests that Bayley scores may, in a very preliminary way, serve as indicators of program impact.

Phase I - Limitations of the Bayley Analysis

There are, of course, limitations to any approach that relies on a single scale to measure program impact. Bayley Scales measure global development and may not be sensitive to small gains that infants may make over time. Ideally, it would also be desirable to have other measures of infant functioning that could provide the basis for cross-verification of changes over time.

The Vulpe is another popular measurement device which is used by more than 50% of the programs to monitor child progress. There are, however, a number of technical difficulties in the administration and scoring of the Vulpe which make it unsuitable for the kind of quantitative analysis that can be applied to the Bayley. Other measurement devices, by virtue of their

restricted utilization among the programs, are also not appropriate to the present analysis.

A major problem was evident by the end of Phase I in analyzing pre-post changes in Bayley scores. Client data were collected from over 830 client files with active and completed cases being equally represented. However, the Bayley Scales were not routinely administered. Of the 422 cases that had been terminated, there were only 150 cases that had both intake and termination Bayley scores. When missing cases of other variables were noted, it was evident that the sample size was too small to do any significant regression analysis on the changes of Bayley scores between intake and termination.

To increase the sample size so that meaningful regression analyses could be computed, the initial task of this study was to follow up those active cases in Phase I reporting intake Bayley scores to determine which cases had since been closed, and what termination Bayley scores had been collected.

APPROACH

The most ideal method to identify program effects on Bayley scores involves a representative sampling of the target group, with random assignment of individuals to experimental (treatment) and control (no treatment) groups. The two groups would then be compared according to selected indicators upon termination of the testing period. This method, however, is clearly unacceptable in view of the ethical objections to withholding treatment to clients.

The best available alternative method, and the one that has been adopted in this study, involves controlling for naturally occurring variations that exist within and between programs. By controlling for naturally occurring variations, several comparison groups have been created from the client and program related data in Phase I which may or may not, according to statistical analysis outcomes, be linked to differential program impacts

(i.e., Bayley change scores). For example, the results of Phase I identified two patterns in the frequency of home visits: once a week visits or more often was the most common, and once every two weeks or less frequently was the second largest category. Multiple Regression Analysis may then be used to see if high intensity of program exposure (at least weekly home visits) versus low intensity (bi-monthly home visits or less often) have any impact on Bayley change scores when the effect of pre-treatment variables have been statistically removed.

It is important to clarify at the outset that this study is analyzing Bayley change scores specifically and only indirectly is it studying program effectiveness. It is very possible that the Bayley does not measure all the possible treatment gains and some infant improvement may not be reflected in higher Bayley scores.

This means that although a variable may relate to higher Bayley change scores, it does not necessarily mean it contributes to program effectiveness. In the same respect, if a variable does not relate to higher Bayley change scores, it does not necessarily mean it does not contribute to program effectiveness.

Further, in Phase I, the return rate on crucial treatment variables (such as what approaches were used in treatment) had very low response rates and could not be included in the multiple regression analysis. Only general variables such as intensity of treatment, and termination disposition were included as treatment variables. This means that there may be other variables that contributed to higher change scores, however, they were unavailable for analysis in this study.

However, notwithstanding these shortcomings the Bayley appears to be a relevant measure of program effectiveness.

Objectives of Analysis

The application of multiple regression analysis to the data listed above allows identification of the combined and separate effects of a set of factors (predictors) on Bayley scores at termination that can not be attributed to the infant's Bayley scores at intake. Such analysis responds to several issues:

- Analysis of how infant and family characteristics are associated with Bayley change scores.
- Analysis of how treatment variables are associated with Bayley change scores.
- Analysis of how the infant, family and treatment variables differentially impact change scores for each diagnostic category.

In summary, this analysis would permit evaluation of the usefulness and appropriateness of Bayley change scores and provide some insight as to its usefulness as a measure of program effectiveness.

CHAPTER II - METHOD

This chapter presents the method of data collection, data analysis, and an analysis of change scores and residual scores. Those readers who are interested in the statisical procedures will find this chaper particularly useful. Others may prefer to skip this chapter and continue with Chapter III.

DATA COLLECTION

The first step in the study involved the examination of Phase I file data in order to identify the names of active cases in the programs from which they were drawn that had Bayley scores at intake. A short questionnaire was then constructed, based upon selected items from the Phase I questionnaire. Items included Bayley scores at completion of program involvement, reason for termination, and nature of follow-up plans (see Appendix A).

The questionnaires were forwarded by mail to Program Directors, along with a covering letter which explained the purpose of the questionnaire and listed the names of infants (or the coded equivalents where appropriate) who were identified as having intake Bayley scores. In total, 249 (93%) of the questionnaires were returned.

Returned questionnaire data were added to existing Phase I file data. Preliminary data analyses were conducted to provide broad indications of inter-relationships between Bayley change scores and client/program variables. Subsequently, Multiple Regression Analyses were conducted.

DATA ANALYSIS

Descriptive Analysis Procedures

The initial approach to the examination of the data was primarily descriptive. Individual variables were first examined by means of frequency distributions, which reported the high-to-low range of values, as well as the average score for that dimension. In some cases, cross-tabluations of

variables were performed which showed the relationship between two variables. For example, males and females were examined to see if there were any differences according to diagnostic categories. Finally, analysis of variance procedures were used in order to make comparisons on variables which were continuous in nature. For example, comparisons among the three diagnostic categories were made in terms of the total M.D.I. and P.D.I. Bayley score.

Regression Analysis

The major method of data analysis employed was multiple regression, which is most appropriate in finding the best predictors among a set of variables in terms of some outcome measure. For example, regression procedures can be used to assess the relative importance of a set of variables, such as age of child, sex of child, or diagnostic category of child on the prediction of Bayley scores.

Regression is a powerful and useful tool in deciding which among a set of variables are most closely related to a particular outcome. Technically, what regression accomplishes is the construction of a prediction equation which reflects the relationship between the predictor variables and the outcome variables. This prediction equation is usually termed "the line of best fit".

For example, one could imagine a line which would represent the relationship between age and height. As illustrated in Table 2.1, age and height are plotted on the horizontal and vertical axes, respectively, with individual axes representing children of a given age and a given height. The "line of best fit" represented in the figure represents the general relationship between age and height. Of course that relationship is not perfect, since there are a number of points which do not fall exactly on the line; in other words, there is considerable error, or deviations from the "line of best fit". Essentially, every regression plots the "line of best fit" for the relationship between some outcome or predicted variable and one or more predictor variables.

Change Scores

The outcome variable of interest for the current study was the post-test score on the Bayley test. Given the fact that there was undoubtedly a strong relationship between infant's initial score on the Bayley scales and the post-test score, one possible method of controlling for this relationship would be to subtract the infant's pre-test score from its post-test score. The change score is analyzed in terms of which program treatment dimensions or characteristics of the infant tended to result in positive or negative changes.

There are several problems with looking at change scores, or raw difference scores as they are sometimes referred to. Perhaps the most important difficulty is that change scores do not take into account differences in the initial starting point. There may be a relationship between the amount of change, and the initial starting point. In other words changes of the same size may mean different things at different points on the measurement scale. For example, a weight gain of five pounds has a very different meaning for a new-born baby and for a full-grown adult.

In addition, in some cases children who score at different points on the Bayley scale can be expected to improve more than children at other points on the scale. Further, the fact that there may have been different testers administering the Bayley scales to the children at different points in time adds sources of error to the computation of change scores. Finally, raw difference scores tend to be unreliable because the error terms of both contributing tests are confounded.

Residual Gain Scores

The residual gain score overcomes many of the above difficulties (Manning and DuBois, 1962; Cronback and Furby, 1970). The residual gain score is that portion of the variance in post-scores which is not explained by pre-scores. Technically, it is derived by partialling the pre-score variance

from post-score variance using the least-squares solution for linear regression. The error variance that remains, after pre-score variance is removed, is referred to as the residual variance. In effect, the residual variance is that portion of the variance in post-score which is not predicted by pre-score. Typically regarded as random error, a portion of this residual variance may in fact be systematically related to pre-treatment or treatment variables. Such a relation could be examined by regressing the residual variance on such variables.

Hence, the residual score, as that portion of the variance in the Bayley post-score which is not predicted by the pre-score, is conceptually closer to many of our intuitive notions of change. Further, in addition to correcting for differences in the initial level of performance, it yields a more reliable score than the simple change method.

Obtaining Residual Gain Scores

The residual variance that results from regressing Bayley post-scores on pre-scores, while superficially reflective of a group change from pre-score to post-score, is in fact the sum of individual residual variances across subjects. When Bayley post-scores are regressed on pre-scores a regression line of best fit is obtained which predicts individual's "expected post-score". It is the difference between the individual's actual post-score and the expected post-score that is the residual gain score. It should be noted however, as has been illustrated in Table 2.2, that the residual gain score can be both positive and negative. For example, a child who improves a greater number of mental age months than would be expected given his initial mental and chronological age, would have a positive residual. A child who improves less than expected, would have a negative residual.

Once each individual's residual score is calculated, using a statistical package that does this automatically, that score can be treated as any other descriptive variable. It can be used in correlational analysis, as a dependent or independent variable in further regression analyses or as a variate in analysis of variance.

The Variables in the Regression Analysis

In order to evaluate the respective contribution of pre-treatment variables, and program characteristics, a hierarchical regression was computed with residual gain scores being the outcome variable of interest. This hierarchical analysis first evaluated all the variables having to do with characteristics of infants and their families, and only then considered variables having to do with program characteristics. (The variables in the analysis appear in Appendix B).

The pre-treatment variables were entered first to statistically control for different characteristics of infants. The essential variables in this study are the treatment variables. As mentioned in Chapter I, the data collected in Phase I had poor return rates on several key treatment variables. The only variables associated with treatment that had enough data to be considered in this analysis were:

- the infant's age at admission (AGEAD);
- whether the Intensity of treatment was more than one visit per week (Intensity);
- whether the Individual Treatment plan was completed (Q15B5);
- how old is the infant stimulation program? (OQ1P2);
- has the infant or mother received any other services from the Infant Stimulation Program? (Q35).

Finally, two variables were created which reflected the termination situation. The variables were considered only after the variance associated with pre-treatment and treatment variables were removed from the residual gain scores.

- Terminated Rehabilitated (TERM2) refers to an infant who has achieved development appropriate to his or her age at the time of discharge, or if the mother had decided that the child had improved sufficiently to be discharged.
- Reached Age Limited (TERM1) refers to infants that were discharged because they reached the age limit for treatment in the program.

Only those variables that had at least a .15 correlation with the residual gain score were included in the multiple regression analysis (see Appendix C).

Further, only those variables that contributed an additional .04 R^2 Change on the Regression Tables in Appendices D,E,F are reported in this chapter. The R^2 Change represents the amount of variance in the residual gains score which is directly attributable to that variable. An R^2 Change of .04 is considered a reasonable cut-off point to determine the inclusion of a variable.

SUMMARY

This chapter has described some of the basic data analysis techniques employed in the analysis of the data. Descriptive analysis procedures (frequency distributions and cross-tabulations) were first discussed, followed by the basic rationale for multiple regression analysis. The problems with working with change scores and a description of residual gain scores was also introduced.

TABLE 2.1

ILLUSTRATION OF THE "LINE OF BEST FIT"

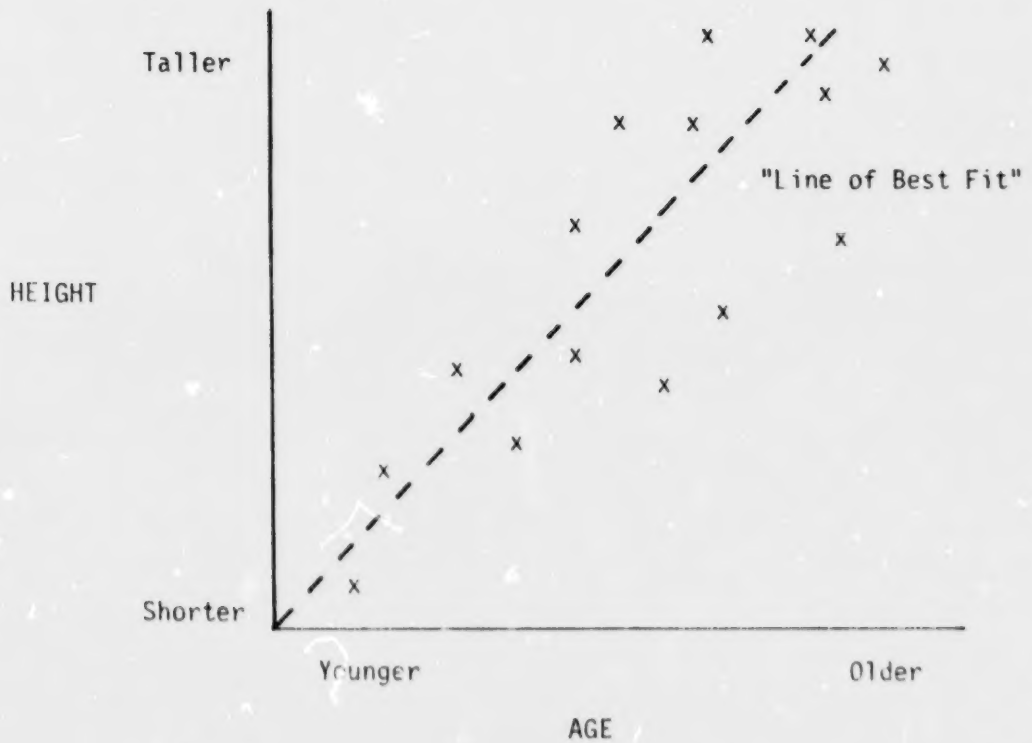
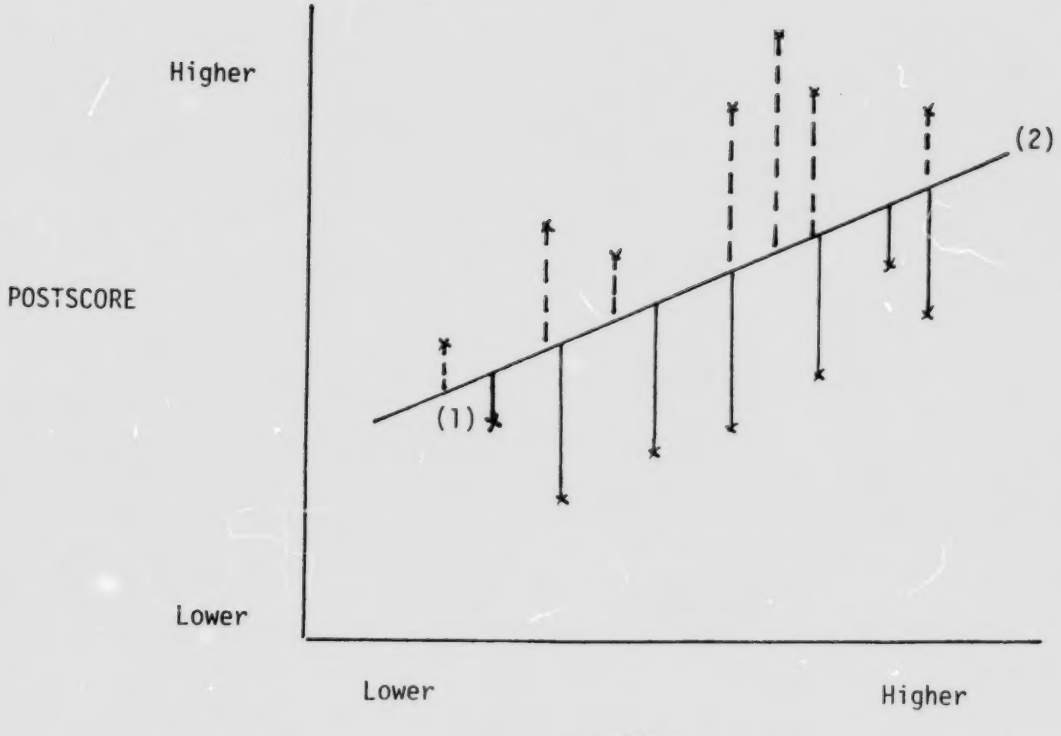


TABLE 2.2

ILLUSTRATION OF RESIDUAL GAIN SCORES



CODE:

——— Negative residual gain score

- - - - Positive residual gain score

NOTES:

1. Although an infant may have a higher score at post testing, if that score is lower than what would be predicted from the pretest, that score is a negative residual gain.

2. The line of best fit in this illustration does not reflect the slope of the actual results in this study.

CHAPTER III - DESCRIPTION OF UPDATED DATA

This chapter provides a general description of the updated information derived from the Phase II questionnaire. This information includes data concerning reasons for termination or discharge, disposition of infants at termination, the amount of time children spent in treatment, and information concerning Bayley scores. Further, it shows any changes in the trends evident in the Phase I report.

COLLECTION OF ADDITIONAL DATA

Of the original 832 cases for which information was available from the Phase I study, 150 of the terminated cases had had both pre- and post-scores on the Bayley. In Phase II, data was obtained on an additional 249 cases. Not all of this data was usable; some of these infants had not yet been terminated and, therefore, had no post-test Bayley scores and some had been terminated but had not been administered post-test Bayleys. When those infants who had been terminated and had been administered a post-test Bayley were added to the original sample, the combined sample consisted of 348 infants who had both pre- and post-test scores on the M.D.I. of the Bayley and 322 who had pre- and post-test scores on the P.D.I. of the Bayley (not every infant had pre- and post-test scores on both the M.D.I. and the P.D.I.).

Primary Reason for Termination

The primary reason for termination or discharge of the infants for whom updated information had been collected, was essentially similar to the reasons given for the children in the Phase I study. The most common reason for discharge was that the infant had reached the age limit of the program (45%). Only 14% of the sample had reached developmental norms at the time of discharge (see Table 3.1).

Referral at Termination

The majority of the infants (70%) had been referred at time of termination (see Table 3.1). In terms of the disposition of infants at the time of termination, the highest percentage was referred to special nursery schools (21%), with the next highest percentage (13%) referred on to developmental centres. These figures for disposition of infants at termination were very similar to those reported for the Phase I study. (See Table 3.2).

Comparison of Pre-Test and Post-Test Scores

In general, infants' scores on the M.D.I. and P.D.I. post-tests were similar to those on the pre-tests (Table 3.3 and 3.4). The pattern of scores demonstrated substantial stability over this one-year testing interval.

Some infants, however, demonstrated considerable change in their pre-test and post-test scores over the interval. For example, approximately 11% of the infants who scored 52 or under on the M.D.I. pre-test, scored 85 or higher on the post-test. These shifts also appeared at the other end of the spectrum, 10% of infants who scored 101 points or higher on the pre-test had scored between 84 and under on the post-test.

There are several possible reasons for these changes. First of all, they may represent true or meaningful increases or declines. Increases in either M.D.I. or P.D.I. scores may be attributable to the effectiveness of Infant Stimulation programs, improvements in medical conditions of children which might result in improvements in both physical and mental development, and changes in adverse environmental conditions such as the improvement of parental caretaking skills. Decreases in P.D.I. or M.D.I. scores could similarly be attributable to declines in physical health, increases in family problems or other unmeasured factors. On the other hand, increases and declines may have been a function of differences in testing conditions. In theory, the Bayley requires a skilled tester, although it appears that workers themselves typically administered the Bayley to their infant

clients. Variations in the identity or style of the tester across two time periods is one likely explanation for those infants who scored relatively high on the pre-test, but who declined to extremely low scores on the post-test. In addition, certain categories of children show persistent declines in Bayley scores across time (Down's Syndrome children).

Although approximately half of all the infants stayed within 16 points, more or less, of their initial pre-test score on the subsequent post-test, a substantial percentage of children received lower post-test scores than pre-test scores. On the M.D.I. Bayley index, 26% of the infants declined, more than 16 points between the pre- and post-test interval. Similarly, 28% of scores on the P.D.I. represent declines of more than 16 points from pre- to post-test. On the other hand, 18% of infants improved their scores by at least 16 points on both the M.D.I. and the P.D.I. from the pre- to the post-test period (see Table 3.5). These patterns may reflect genuine declines or increases on the part of these infants, or may be a function of errors in testing.

Bayley Scores by Diagnostic Category

There were considerable differences among the three diagnostic categories of infants in terms of both pre- and post-test M.D.I. and P.D.I. scores. The majority of high risk infants (58%) scored in the normal range or above, that is, above a score of 85 on the pre-test M.D.I. Their scores tended to improve on the post-test M.D.I.; 61% scored as average or above average.

Only 30% of the developmentally disabled children and 31% of those children who were both developmentally disabled and high risk scored at or above the average score at the pre-test on the M.D.I. At the time of the post-test, the percentage of developmentally disabled children scoring above 85 had declined to 27%, and had declined to 28% for children who were both developmentally disabled and high risk.

Conversely, fewer high risk children scored 52 or below on the M.D.I. on the pre- or post-test (both 9%) than did developmentally disabled children (pre-test, 38%; post-test, 37%) or children who were both developmentally disabled and high risk (pre-test, 32%; post-test, 23%). In other words, the high risk children were less apt to have serious mental defects than were children with some developmental disability. (See Table 3.6).

A similar pattern emerged for the P.D.I. socres. More than half of the high risk children had average or higher scores, and improved on the P.D.I. from pre-test to post-test. Fewer than one-quarter of the developmentally disabled infants had average or better scores, and their scores tended to decline from pre-test to post-test. Approximately half of the infants with developmental disabilities had P.D.I. scores of 52 or less, indicating severely delayed physical development. (See Table 3.7).

SUMMARY

Data collected on infants as part of the follow-up indicated that there were no major differences between the findings of the Phase I study and those found for the additional cases in terms of reasons for termination or discharge or disposition of infants at termination. Although there was considerable variability in the distribution of post-test Bayley scores when compared to pre-test Bayley scores, in general, most infants remained within approximately 16 points of their original score. In terms of both M.D.I. and P.D.I. post scores, infants were more likely to decrease by more than 16 points than they were apt to increase by more than 16 points from the pre- to the post-test. There were considerable differences according to diagnostic category of infants, with high risk infants generally scoring considerably higher on both the P.D.I. and M.D.I. at the post-test.

Table 3.1

Primary Reason for Termination or Discharge

	No	%
Reached Age Limit	255	45
Therapist Terminated	21	4
Moved from Catchment Area	77	13
Parents Terminated	38	7
Reached Developmental Norms	80	14
Reach Age Limit but Retained Due to Lack of Program	3	1
Referred to More Appropriate Program Within this Agency	9	2
Referred to More Appropriate Program in Another Agency	57	9
Other	31	5
TOTAL	571	100%

Has Infant Been Referred on at Termination?

	N	%
Yes	400	70
No	154	27
Don't Know	16	3
Total	570	100

TABLE 3.2

DISPOSITION OF INFANTS AT PROGRAM TERMINATION

Disposition	Infants	
	No.	%
Special Nursery School	99	21
Normal Nursery School	35	7
Developmental Centre	64	13
Specialized Treatment Centre	40	8
Integrated Nursery	15	3
Day Care Centre	28	6
No Follow-Up Necessary	55	12
No Program Available	2	0
Parents Refused Recommended Follow-up	17	4
Other	110	23
Don't Know	14	3
Total	479	100

Table 3.3

M.D.I. Bayley Pre- and Post-Scores

Post-Test Scores (%)	Pre-Test Scores (%)						
	52 and Under	53-68	69-84	85-100	101-116	117 and Over	Total
52 and Under	59%	25%	22%	11%	6%	0%	27%
53-68	23	20	25	14	4	0	18
69-84	7	37	36	17	6	0	19
85-100	3	14	10	28	27	50	16
101-116	5	2	5	22	34	50	14
117 and Over	3	2	2	8	23	0	6
Total Infants	93	49	67	83	48	8	348

Table 3.4

P.D.I. Bayley Pre- and Post-Scores

Post-Test Scores (%)	Pre-Test Scores (%)						
	52 and Under	53-68	69-84	85-100	101-116	117 and Over	Total
52 and Under	72%	37%	26%	21%	15%	0%	40%
53-68	12	21	14	12	18	0	14
69-84	8	24	26	15	4	8	14
85-100	5	10	22	38	26	54	20
101-116	3	8	6	13	22	15	8
117 and Over	0	0	6	1	15	23	4
Total Infants	113	38	63	68	27	13	322

TABLE 3.5

POST SCORES MINUS PRE SCORES ON THE BAYLEY SCALE

	MDI		PDI	
	N	%	N	%
Post Score Less than the Pre Score by over 16 points	92	26%	99	28%
Post Score Within 16 points more or less than the pre score	198	56	186	54
Post Score More than the pre score by over 16 points	64	18	64	18
Totals	354	100%	349	100%

Table 3.6

Pre- and Post-Test M.D.I. Scores by Case Type

M.D.I. Score	High Risk		Developmentally Disabled		Both 1 and 2		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
52 and Under	9%	9%	38%	37%	32%	23%	29%	27%
53-68	11	5	16	21	17	26	15	18
69-84	22	25	16	15	20	23	18	19
85-100	35	25	18	12	21	17	23	16
101-116	18	28	10	10	8	7	12	14
117 +	5	8	2	5	2	4	3	6
	100	100	100	100	100	100	100	100
Number of Infants	174	93	336	201	86	57	596	351

Table 3.7

Pre- and Post-Test P.D.I. Scores by Case Type

P.D.I. Score	High Risk		Developmentally Disabled		Both 1 and 2		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
52 and Under	13%	10%	47%	53%	37%	42%	36%	41%
53-68	10	14	14	15	21	9	14	14
69-84	20	15	17	12	17	22	18	14
85-100	29	38	16	13	18	22	20	20
101-116	17	15	5	6	4	5	8	8
117 +	11	8	1	1	3	-	4	3
	100	100	100	100	100	100	100	100
Number of Infants	168	80	326	194	83	55	577	329

CHAPTER IV - ANALYSIS OF BAYLEY SCORES

The following chapter presents information concerning the statistical analysis of the change scores of the Bayley Scales. The analysis of the total sample for both M.D.I. and P.D.I. scores was computed and then separate analyses were carried out for the environmentally at risk infants and a second category including the developmentally disabled infants and those infants who were both developmentally disabled and at high risk.

RESULTS

Correlations Among Variables

The majority of correlations among the variables assessed were low in magnitude. The only variable that correlated at more than .50 with post-test Bayley M.D.I. or P.D.I. scores were pre-test Bayley scores. The relationship between post-test M.D.I. and P.D.I. scores was fairly high (.72), as might be expected.

The only correlations higher than .50 among the other variables were between items with obvious overlap (for example, the item assessing whether or not the father was currently employed was correlated with the item assessing whether the family was characterized by extended periods of unemployment). Similarly, items having to do with the presence or absence of particular family problems (alcoholism, child neglect) were associated with the total number of family problems. (For correlation matrix, see Appendix C).

Computation of Residuals

As discussed earlier in Chapter II, the data analyses which were conducted on the M.D.I. and P.D.I. scales of the Bayley were computed on the residual

gain scores for both sub-scales. In simple terms, the residual gain scores is the remaining amount of change in the post-test Bayley scores that cannot be predicted by the pre-test Bayley scores.

Analysis of M.D.I. Residual Gain Scores

No treatment variables contributed significantly to M.D.I. residual gain scores for all infants having pre- and post- M.D.I. Bayley scores. Infants who were Terminated Rehabilitated did have higher M.D.I. residual gain scores. This means that the assessment of the program staff to terminate the infant as rehabilitated is supported by the Bayley results.

Two pre-treatment variables were associated with lower M.D.I. residual gain scores. Down Syndrome infants were more likely to have lower scores than other infants. In addition, infants with a greater number of family problems were more likely to have lower scores (Table 4.1).

Analysis of P.D.I. Residual Gain Scores

A similar pattern was evident for the infants that had pre- and post-P.D.I. Bayley scores. No treatment variables contributed to Bayley P.D.I. residual gain scores, however, the variable Terminated Rehabilitated is associated with higher P.D.I. residual gain scores. This means, once again, that the designation by the program staff that the infant has been terminated as rehabilitated is supported by higher Bayley P.D.I. residual gain scores.

In addition, as identified in the analysis of M.D.I. residuals, Down's Syndrome infants are more likely to have lower P.D.I. residual gain scores than other infants (Table 4.2).

Comparisons Among Diagnostic Categories

In order to establish whether or not there were real differences among the various diagnostic categories of infants and whether or not it was

appropriate to analyze their results separately, an analysis of variance was computed on M.D.I. and P.D.I. residual gain scores. The analysis of variance indicated that there were in fact statistically significant differences between the environmentally at risk children and those children who were either developmentally disabled or those who were both categories (developmentally disabled and high risk). Therefore, it was decided that it would be useful to compute a multiple regression analysis on residual M.D.I. and P.D.I. gain scores for the high risk children separately from the other children.

Analysis of High Risk Children

For the high risk children, the correlation between pre-test M.D.I. scores and post-test M.D.I. scores was .34, indicating that performance on the pre-test on the M.D.I. was not particularly a good predictor of subsequent post-test performance on the M.D.I. On the multiple regression analysis of the residual M.D.I. gain scores for the high risk children, there were no statistically significant treatment predictors. Once again, however, if the infant had been terminated as rehabilitated (that is, if the infant had achieved appropriate developmental progress), residual M.D.I. gain scores were more likely to increase. In terms of pre-treatment variables, infants who weighed less at birth were more likely to have higher M.D.I. residual gain scores, and infants who have immature primary caregivers are more likely to have lower M.D.I. residual gain scores. (Table 4.3).

For the regression analysis of P.D.I. residual scores for the high risk children, one treatment variable emerged as marginally significant. This predictor was whether or not children were receiving sessions from the Infant Stimulation worker at least once a week. If the infants were receiving sessions at least once a week, their P.D.I. residual gain scores were apt to increase. In other words, high risk infants seem to benefit from increased frequency of visits. This result, however, must be interpreted with caution. The association between intensity and gain scores is a weak one (contributes only 4% of the variance) and may, in fact, represent the influence of other variables not controlled in the analysis, rather than being a treatment effect.

Two pre-treatment variables were negatively related to P.D.I. residual gain scores. The first was whether or not the family was receiving income assistance; families who were receiving income assistance were likely to have lower P.D.I. residual gain scores. Similarly, if the medical report had been completed on the child, P.D.I. residual gain scores were likely to decline. What this latter finding probably indicates is that some of these high risk children had some physical condition which may have been interfering with their normal rate of physical development. Since there was an overall low rate of completion of medical assessment forms for high risk children in general, it is likely that children with such medical assessments in their files did in fact suffer from some physical difficulty. (Table 4.4).

In addition, children that were terminated as Rehabilitated had higher P.D.I. residual gain scores.

Analysis of Developmentally Disabled Children and "Both"

For the developmentally disabled children and "Both" categories of infants, there also were no treatment variables that were significant predictors of M.D.I. residual gain scores. However, once again infants terminated as rehabilitated had higher M.D.I. residual gain scores for Developmentally Disabled and "Both" children. With regards to pre-treatment variables, Down's Syndrome children tending to have lower M.D.I. residual gain scores. Another pre-treatment predictor was the total number of family problems. The larger the number of family problems, the lower the post-test M.D.I. residual gain scores (Table 4.5).

The analysis of P.D.I. indicated that no treatment variables were associated with changes in P.D.I. residual gain scores (Table 4.6). The only predictor was whether or not the child had Down's Syndrome, with the diagnosis of Down's Syndrome being associated with a decline of P.D.I. residual gain scores.

SUMMARY

As expected, the Bayley pre-test scores were the single best predictor of post-test scores. Subsequent multiple regressions on residuals gain scores (controlling for the contribution of pre-test Bayley scores) indicated that variables such as age at admission to the program, whether a treatment plan was completed and frequency of home visits did not appear to be strongly related to Bayley change scores. Although, for the high risk infants, increased intensity of visits to the infant and family were associated with higher scores this relationship was a weak one. Staff designation of an infant as terminated rehabilitated is supported by increased Bayley residual gain scores. In terms of pre-treatment variables, consistently Down's Syndrome children had lower residual gain scores than other infants.

Table 4.1

Predictors of M.D.I. Residual Gain Scores:* All Infants

Treatment Variables: **None**

Other Variables:

- **Down's Syndrome**
  - Children with Down's Syndrome more likely to have **lower** (negative) M.D.I. residual gain scores.

- **Terminated Rehabilitated**
  - Children who were terminated as rehabilitated (reached developmental norms) are more likely to have **higher** (positive) M.D.I. residual gain scores.

- **Total Number of Family Problems**
  - Children from families with a larger number of problems are more likely to have **lower** (negative) M.D.I. residual gain scores.

* Residual Gain Scores are the remaining amount of change in the Post-test Bayley Scores that can not be predicted by the Pre-test Bayley Score.

Table 4.2

Predictors of P.D.I. Residual Gain Scores:* All Infants

Treatment Variables: **None**

Other Variables:

- **Down's Syndrome**
  - Children with Down's Syndrome are more likely to have **lower** (negative) P.D.I. residual gain scores.

- **Terminated Rehabilitated**
  - Children who were terminated as rehabilitated (reached developmental norms) are more likely to have **higher** (positive) P.D.I. residual gain scores.

* Residual Gain Scores are the remaining amount of change in the Post-test Bayley Scores that can not be predicted by the Pre-test Bayley Score.

Table 4.3

Predictors of M.D.I. Residual Gain Scores:* High Risk Children

Treatment Variables: **None**

Other Variables:

- **Terminated Rehabilitated**
  - Children who were terminated as rehabilitated (reached developmental norms) are more likely to have **higher** (positive) M.D.I. residual gain scores.

- **Total Number of Family Problems**
  - Children from families with a larger number of problems are more likely to have **lower** (negative) M.D.I. residual gain scores.

* Residual Gain Scores are the remaining amount of change in the Post-test Bayley Scores that can not be predicted by the Pre-test Bayley Score.

Table 4.4

Predictors of P.D.I. Residual Gain Scores:* High Risk Children

Treatment Variables:

- **Intensity of Sessions**
  - Children who were receiving Infant Stimulation sessions at least once a week (or more often) are more likely to have **higher** (positive) on P.D.I. residual gain scores.

Other Variables:

- **Terminated Rehabilitated**
  - Children who were terminated as rehabilitated (reached developmental norms) are more likely to have **higher** (positive) P.D.I. residual gain scores.

- **Family Receiving Income Assistance**
  - Children whose families were receiving income assistance are more likely to have **lower** (negative) P.D.I. residual gain scores.

- **Medical Report Completed**
  - Children with completed medical reports in their files are more likely to have **lower** (negative) P.D.I. residual gain scores.

* Residual Gain Scores are the remaining amount of change in the Post-test Bayley Scores that can not be predicted by the Pre-test Bayley Score.

Table 4.5

Predictors of M.D.I. Residual Gain Scores:*
Developmentally Disabled Children

Treatment Variables: **None**

Other Variables:

- **Down's Syndrome**
  - Children with Down's Syndrome are more likely to have **lower** (negative) M.D.I. residual gain scores.

- **Terminated Rehabilitated**
  - Children who were terminated as rehabilitated (reached developmental norms) are more likely to have **higher** (positive) M.D.I. residual gain scores.

* Residual Gain Scores are the remaining amount of change in the Post-test Bayley Scores that can not be predicted by the Pre-test Bayley Score.

Table 4.6

Predictors of P.D.I. Residual Gain Scores:*
Developmentally Disabled Children

Treatment Variables: None

Other Variables:

- **Down's Syndrome**
  - Children with Down's Syndrome are more likely to have **lower** (negative) P.D.I. residual gain scores.

* Residual Gain Scores are the remaining amount of change in the Post-test Bayley Scores that can not be predicted by the Pre-test Bayley Score.

CHAPTER V - CONCLUSIONS AND RECOMMENDATIONS

This chapter consists of a series of conclusions based upon the data which were collected for this project and the recommendations for the use of Bayley scores in Infant Stimulation programs.

USEFULNESS OF BAYLEY SCORES

The Bayley test distinguished clearly among diagnostic categories of children. In general, high risk infants had considerably higher pre- and post-test scores on the Bayley than did developmentally disabled children. The ability to differentiate among groups of interest is clearly an important aspect of the validity of any test.

In addition, the Bayley may prove useful in indicating important predictor variables among specific groups of children. For example, among the developmentally disabled children there appears to be a clear decline in Bayley scores associated with a diagnosis of Down's Syndrome. The diagnosis of developmental disability for children with conditions other than Down's Syndrome, however, may not be associated with a decline in intellectual performance. The Bayley may serve as a useful tool in differentiating among these diagnostic categories.

Similarly, the Bayley appears to have demonstrated in this particular study that poor cognitive performance was associated with the total number of family problems for high risk children. Perhaps this finding served merely to reinforce what workers in the field have known all along, but the implication of this finding is that such family problems may be altered by interventions, and such interventions may result in increased cognitive performance by children.

In actual practice, this process may be already taking place in the field; participation in the infant stimulation program may provide sufficient support and access to resources for families of high risk children so that the task of parenting no longer overwhelms the caretaker.

The Bayley appears to be fairly reliable, demonstrating consistency over the one-year testing interval, with the majority of all children scoring within plus or minus 16 points of their original score. This consistency of prediction was, of course, lowered by either treatment effects (high risk children tended to improve from the pre- to the post-test) as well as physical conditions (e.g., Down's Syndrome children tended to have lower scores from pre- to post-test). In addition, the factors which were related to prediction of Bayley residual gain scores, provided theoretically consistent patterns of results for both the total group and for the two diagnostic categories assessed. Overall, therefore, it appears that there is potential value in the continuation of administration of both pre- and post- Bayley test.

Recommendation 1: The Ministry's Program Supervisors should request that Program Directors maintain current Ministry policy of assessing infants at both intake and termination with Bayley tests.

TREATMENT EFFECTS

In the absence of substantial treatment-related data and without a control group comprising infants who had not received the program, this study could not determine the value or effectiveness of Infant Stimulation programs. However, treatment-related variables such as age at admission to the program, whether an ITP was completed and frequency of home visits were investigated by looking at variations among programs along these dimensions.

The effects of these variables were analyzed separately for MDI and PDI scores and for high risk and developmentally disabled sub-groups but did not appear to be strongly related to residual gain scores. Although PDI change for high risk children tended to increase when sessions occurred at least once a week, this difference was small and may have been due to the influence of non-treatment variables.

Nevertheless, this study has shown that a treatment-related variable can be associated, however marginally, with gains in Bayley scores. This does suggest the possibility that with sufficient data on variables such as treatment approaches and duration of treatment, there may have been additional significant findings. Without this data though it is impossible to determine their relationship to changes in Bayley scores. The need for better treatment documentation appeared in the recommendations section of the Infant Stimulation Phase I report (recommendations 1 and 6). This study further supports those recommendations to provide the necessary treatment-related information to evaluate Bayley scores and program effectiveness.

Recommendation 2: Once additional treatment-related information such as treatment approaches and duration of treatment are collected, another research study similar to this analysis should be carried out to determine the impact of treatment-related variables on gains in Bayley scores.

APPENDIX A

THE BAYLEY SCALE FOLLOW-UP QUESTIONNAIRE

REF: 820628

QUESTIONNAIRE CODE # ____

BAYLEY SCALE FOLLOW-UP QUESTIONNAIRE

1. NAME OF AGENCY _____

2. Have you administered the Bayley Scale to this infant more than once?

   Yes ---------- 1

   No (Go to Question 5) ---------- 2

3. Date of most recent Bayley Scale Administration

   ___ ___ ___
   day month year

4. Please record the most recent Bayley Scale scores below.

   A. Bayley Mental

      Chronological Age

      ____ ___
      total months & days

      Mental Development Indes (MDI) Score _____

      Age Equivalent

      ____ ___
      total months & days

   B. Bayley Motor

      Chronological Age

      ____ ___
      total months & days

      Psychomotor Development Index (PDI) Score _____

      Age Equivalent

      ____ ___
      total months & days

5. Has this case been terminated from your program?

   Yes (Continue on Side 2) ---------- 1

   No (Do not complete Side 2) -------- 2

NOTE: If "yes to Question 5
Please continue with Question 6
on the other side of the page.

6. What was the termination date?

___ _____ ___
day mo. yr.

7. What was the reason for termination?

Reached Age Limit 01
Therapist Terminated 02
Moved From Catchment Area 03
Parents Terminated 04
Reached Developmental Norms 05
Reached Age Limit But Retained
Due to Lack of Program 06
Referred to More Appropriate
Program Within This Agency 07
Referred to More Appropriate
Program in Another Agency 08
Other (Specify_____) 09

8. At termination, was the infant referred to another prevention or treatment program (either within or outside your agency) including adoption or foster care?

Yes 1
No 2
Don't Know..... 3

9. Type of Prevention or Treatment

Special Nursery School 01
Normal Nursery School 02
Developmental Centre 03
Specialized Treatment Centre 04
Integrated Nursery 05
Day Care Centre 06
No Follow-Up Necessary 07
No Program Available 08
Parents Refused Recommended Follow-Up 09
Other (Specify) 10

10. Were the follow-up plans and reviews completed as scheduled?

Yes 1
No 2
Don't Know 3

THANK YOU FOR YOUR HELP

DW/dp

APPENDIX B

LIST OF VARIABLES

IN THE MULTIPLE REGRESSION ANALYSIS

LIST OF VARIABLES IN MULTIPLE REGRESSION ANALYSIS

		Lower Numbers	Higher Numbers
AT BIRTH			
DOWNS	Is the Infant Down's Syndrome?	No	Yes
ADOPT	Is Infant Adopted (or Foster) Child?	No	Yes
Q18P1	Was ther Prenatal Problems?	Yes	No
Q16	Was the Infant Full-term?	Yes	No
Q6	Infant's Sex	Male	Female
Q17	Infant's Birth Weight	Lower	Higher
Q9CP2	Child's Birth Order	Earlier Born	Later Born
AT INTAKE TO PROGRAM			
DADWORK	Is Father Employed Full-time?	No	Yes
MARRIED	Is Mother Married to Father?	No	Yes
MOMOCC	Is Mother a Housewife?	No	Yes
HEALTH	Is Infant in Average Health?	No	Yes
PAREPROB	Are there Parental Problems?	No	Yes
QIOCP1	Does Family Receive Income Assistance?	Yes	No
Q15B2	Is the Medical Form Completed?	Yes	No
Q12A8	Was there Extended Periods of Unemployment?	Yes	No
Q12A5	Was there Child Neglect?	Yes	No
Q12A2	Was the Mother/Father Psychiatrically Ill?	Yes	No
Q12A1	Was the Mother/Father an Alcoholic?	Yes	No
Q12A12	Was there an Immature Primary Care Given?	Yes	No
Q12A11	Did Parents/Sibs have Developmental Disabilities	Yes	No
Q12A3	Were there Frequent Parental Separations?	Yes	No
MOMNOHI	Did Mother Complete High School?	Yes	No
DADNOHI	Did Father Complete High School?	Yes	No
Q12A7	Was there Suspected Child Abuse?	Yes	No
Q9BP2	Age of Mother	Younger	Older
Q9AP2	Age of Father	Younger	Older

LIST OF VARIABLES IN MULTIPLE REGRESSION ANALYSIS (Cont'd)

		Lower Numbers	Higher Numbers
SUMMATION VARIABLES AT INTAKE			
HIGHRISK	Is the Infant Categorized as High Risk?	No	Yes
DEVELDIS	Is the Infant Categorized as Developmentally Disabled?	No	Yes
BOTH	Is the Infant Categorized as "Both"?	No	Yes
Q12A13	Total Number of Family Problems	Lower	Higher
Q21BP4	Total Number of Problems from Referral Source	Lower	Higher
TREATMENT RELATED VARIABLES			
INTENSITY	Does Infant Have Sessions at Least Once a Week?	No	Yes
Q35	Did the Parents Make Use of Outside Services?	Yes	No
Q15B5	Was the ITP Completed?	Yes	No
AGEAD	Infant's Age at Admission	Younger	Older
DQ1P2	When Infant Stimulation Program Began	Newer	Older
SUMMATION OF TREATMENT OUTCOME			
TERM2	Has Infant Been Terminated Rehabilitated?	No	Yes
TERM1	Has Infant Terminated Because Reached Age Limited?	No	Yes

APPENDIX C

TABLE OF CORRELATIONS

TABLE C-1

CORRELATION COEFFICIENTS

	PRETEST		POSTTEST		RESIDUALS							
	MDI	PDI	MDI	PDI	MDI	PDI						
	Q24AP3	Q24AP6	Q24CP3	Q24CP6	MDIRESID	PDIRESID	DOWNS	Q14P1	Q16	Q6	Q17	Q9CP2
Q24AP3	621.	585.	348.	324.	348.	316.	621.	578.	592.	619.	517.	606.
Q24AP6	0.73059	598.	342.	322.	338.	322.	598.	555.	569.	596.	495.	584.
Q24CP3	0.57383	0.47954	362.	353.	348.	309.	362.	338.	344.	361.	302.	353.
Q24CP6	0.49971	0.52291	0.71840	338.	311.	322.	338.	311.	323.	338.	282.	330.
MDIRESID	0.00000	0.10573	0.81896	0.52315	348.	305.	348.	325.	332.	348.	292.	340.
PDIRESID	0.17269	0.00633	0.31198	0.03207	0.52127	327.	327.	307.	307.	322.	269.	315.
DOWNS	-0.06153	-0.04689	-0.30007	-0.32643	-0.35044	-0.37975	832.	789.	784.	829.	662.	812.
Q14P1	0.10750	0.12463	0.06715	0.04362	-0.02966	-0.07938	0.13811	788.	744.	786.	635.	755.
Q16	-0.13454	-0.09859	0.04373	0.01743	0.13847	0.07617	-0.13903	-0.14110	784.	782.	654.	770.
Q6	0.00155	0.01391	-0.00396	-0.08594	-0.01825	-0.13825	0.01741	0.04036	-0.03023	829.	640.	810.
Q17	0.14402	0.13432	-0.22008	-0.20858	-0.10579	-0.09930	0.12560	0.13726	-0.64579	0.03211	662.	651.
Q9CP2	-0.11382	-0.12860	-0.07699	-0.08735	-0.04507	-0.01570	0.07049	-0.00380	0.01962	-0.00652	-0.02044	812.
ADOPT	-0.09379	-0.09071	-0.08978	-0.07285	-0.07073	-0.07081	0.08025	-0.03439	0.01951	-0.03974	-0.00571	0.25397
HADWORK	-0.09765	-0.18837	-0.17870	-0.19811	-0.19863	-0.13269	0.17706	-0.01354	0.01684	0.00470	-0.01007	0.08076
MARRIED	-0.13528	-0.24125	-0.07431	-0.20731	-0.03530	-0.09613	0.20107	-0.00203	-0.00640	-0.01852	0.00570	0.09055
MOMOCC	-0.00695	-0.10825	-0.03333	0.00092	-0.04572	0.08169	-0.07232	0.09910	-0.03506	-0.01331	0.08960	0.04450
HEALTH	0.20558	0.24440	0.12986	0.10427	0.05551	-0.00200	0.08908	0.01593	-0.04179	-0.00982	0.04141	-0.03724
PARPERM	-0.12360	-0.04371	-0.13721	-0.02699	-0.07745	-0.07378	0.11473	-0.01252	0.06051	-0.01938	-0.04656	-0.00324
HIGHRISK	0.29746	0.30833	0.32177	0.38796	0.20611	0.21892	-0.26909	0.11362	-0.00291	-0.00563	-0.01156	-0.04308
JEVELNIS	-0.23825	-0.12843	-0.26410	-0.31174	-0.18664	-0.19900	0.32072	-0.05022	-0.01350	0.00454	0.05362	0.04271
MOTH	-0.07459	-0.17075	-0.07540	-0.04606	-0.02883	0.00774	-0.06527	-0.00613	0.02644	-0.00330	-0.05312	0.03714
Q10CP1	-0.08540	-0.11778	-0.09825	-0.21582	-0.08586	-0.19180	0.18512	-0.01534	0.04655	-0.00087	-0.04560	-0.04064
Q1502	0.22426	0.23442	0.15724	0.14037	0.03606	0.00456	-0.04149	0.04038	-0.01355	-0.01249	0.06294	-0.08003
Q12A1	-0.01618	-0.02009	-0.06944	-0.15363	-0.01699	-0.09056	0.09487	0.05301	0.00392	0.01921	0.04101	-0.09947
Q12A2	-0.07561	-0.07616	0.01125	-0.11321	0.04433	-0.07780	0.10724	0.00219	-0.00017	-0.02372	-0.02466	0.00586
Q12A3	-0.03608	-0.01708	-0.07247	-0.11867	-0.03498	-0.10873	0.14144	0.03515	-0.04018	0.01065	0.00459	-0.03129
Q12A5	-0.04219	-0.03677	-0.03166	-0.15802	0.02678	-0.14655	0.16938	-0.01569	0.06137	0.01392	-0.03071	-0.07089
Q12A7	0.00030	-0.04400	0.03618	-0.04685	0.03359	-0.04068	0.11881	0.12366	0.02384	0.04838	0.00906	-0.04232
Q12A8	-0.04363	-0.16733	-0.08460	-0.23914	-0.04967	-0.18907	0.20636	0.03456	0.02752	0.00365	-0.02425	-0.01064
Q12A11	-0.07716	-0.11885	-0.09202	-0.13808	-0.11029	-0.10877	0.13075	-0.01401	0.07040	0.01218	-0.12378	0.02745
Q12A12	-0.17628	-0.21602	-0.09519	-0.22653	0.01836	-0.12440	0.22165	-0.02210	-0.00711	-0.05043	0.01206	0.08422
Q12A13	0.32503	0.24064	-0.11065	0.02240	-0.17250	-0.00739	-0.01808	-0.02122	-0.01476	0.00527	0.04865	0.07332
MARNOHI	-0.04796	0.02235	0.02457	0.08586	0.01387	0.03441	-0.06789	0.04790	-0.05212	0.06199	0.03787	0.04044
WORKHI	0.05320	0.10559	0.04139	0.15085	-0.00176	0.12143	-0.10489	-0.00522	-0.06216	0.00769	0.07441	-0.01055
Q9AP2	-0.18400	-0.17087	-0.09043	-0.11704	-0.09687	-0.12403	0.22749	-0.03451	0.02997	-0.04618	-0.01463	0.35894

Non decimal values: No. of cases for correlation
Decimal values: Correlation coefficients
See appendix B for variable definitions

TABLE C-2

CORRELATION COEFFICIENTS

	PRETEST		POSTTEST		RESIDUALS	
	MDI	PDI	MDI	PDI	MDI	PDI

	Q24AP3	Q24AP6	Q24CP3	Q24CP6	MDIRESID	PDIRESID	DOWNS	Q18P1	Q10	Q6	Q17	Q9CP2
PDUP2	-0.14930	-0.19373	-0.18006	-0.19809	-0.16146	-0.20425	0.29714	-0.04435	0.01479	-0.01140	-0.01881	0.39093
Q21MP4	-0.35396	-0.31256	-0.32103	-0.30548	-0.13769	-0.02755	0.00008	-0.04657	0.04103	-0.00790	-0.03529	0.09655
INTENSIT	-0.11360	-0.09206	-0.01305	0.01641	0.02435	0.04966	0.01693	0.04738	-0.04509	-0.04236	0.03922	0.03141
DURATION	-0.08774	-0.09382	-0.19263	-0.17060	-0.19809	-0.17728	0.03206	-0.00476	-0.02082	0.01224	-0.00300	0.08012
Q15	0.12922	0.13955	0.13201	0.07654	0.08329	0.01139	0.05498	-0.01103	0.01678	-0.01217	-0.07171	-0.02678
Q15M5	0.06511	0.04426	0.10419	0.07867	0.06571	0.04451	-0.05297	-0.00715	0.04042	-0.00382	-0.04269	-0.03775
AGEAD	-0.10557	-0.30489	-0.09548	-0.02691	0.01672	0.20357	-0.16434	-0.09141	-0.01469	0.03126	-0.04557	0.04371
PDUP2	-0.09864	-0.10114	-0.18778	-0.21074	-0.16201	-0.22611	0.21738	-0.01299	0.00426	-0.00323	-0.00458	0.01505
TCPM1	-0.16356	-0.17304	-0.29620	-0.22304	-0.21204	-0.12040	0.02885	-0.00122	-0.01824	0.02200	0.02436	0.14645
TPRM2	0.26465	0.21252	0.42367	0.37512	0.34635	0.29407	-0.15482	0.07309	0.05709	-0.04984	-0.00040	-0.04624

	ADOPT	DADWORK	MARRIED	MUMOCC	HEALTH	PAYERROR	HIGHRISK	DEVELDIS	OUTH	Q10CP1	Q15B2	Q12A1
Q24AP3	621.	621.	621.	621.	621.	621.	621.	621.	621.	570.	557.	529.
Q24AP6	598.	598.	598.	598.	598.	598.	598.	598.	598.	551.	535.	509.
Q24CP3	362.	362.	362.	362.	362.	362.	362.	362.	362.	333.	321.	310.
Q24CP6	338.	338.	338.	338.	338.	338.	338.	338.	338.	313.	303.	288.
MDIRESID	348.	348.	348.	348.	348.	348.	348.	348.	348.	321.	309.	301.
PDIRESID	322.	322.	322.	322.	322.	322.	322.	322.	322.	300.	289.	276.
DOWNS	832.	832.	832.	832.	832.	832.	832.	832.	832.	769.	755.	702.
Q18P1	768.	768.	768.	768.	768.	768.	768.	768.	768.	712.	705.	663.
Q10	784.	784.	784.	784.	784.	784.	784.	784.	784.	724.	714.	668.
Q6	829.	829.	829.	829.	829.	829.	829.	829.	829.	761.	753.	699.
Q17	662.	662.	662.	662.	662.	662.	662.	662.	662.	609.	610.	563.
Q9CP2	812.	812.	812.	812.	812.	812.	812.	812.	812.	753.	738.	693.
ADOPT	832.	832.	832.	832.	832.	832.	832.	832.	832.	768.	755.	702.
DADWORK	-0.03314	832.	832.	832.	832.	832.	832.	832.	832.	768.	755.	702.
MARRIED	-0.11044	0.45807	832.	832.	832.	832.	832.	832.	832.	768.	755.	702.
MUMOCC	0.00873	0.04195	-0.07319	832.	832.	832.	832.	832.	832.	768.	755.	702.
HEALTH	0.01182	-0.00008	-0.04013	0.03534	832.	832.	832.	832.	832.	768.	755.	702.
PAYERPRO	0.00832	0.02173	0.03818	-0.00540	-0.10507	832.	832.	832.	832.	768.	755.	702.
HIGHRISK	0.03690	-0.06614	-0.01304	0.04273	0.21344	-0.13134	832.	832.	832.	768.	755.	702.
DEVELDIS	-0.07324	0.11114	0.38395	-0.16544	-0.17027	0.10284	-0.27460	832.	832.	768.	755.	702.
OUTH	0.04751	-0.12264	-0.15330	0.14004	-0.05479	-0.00503	-0.24418	-0.41222	832.	768.	755.	702.
Q10CP1	-0.14565	0.08465	0.02349	-0.09199	-0.03057	0.04257	-0.28763	0.36529	-0.22088	704.	691.	659.
Q15B2	0.00243	-0.09271	-0.13564	0.02259	0.04932	-0.10092	0.17201	-0.16396	-0.00498	-0.09454	755.	640.
Q12A1	-0.29793	0.18041	0.26475	-0.04905	0.00821	0.00580	-0.13252	0.25568	-0.16782	0.21413	-0.00211	702.
Q12A2	-0.12234	0.15585	0.14172	-0.12615	0.01524	0.03737	-0.15363	0.24409	-0.14253	0.19465	-0.02854	0.24961
Q12A3	-0.20792	0.16714	0.27071	-0.00373	0.01520	0.07185	-0.16756	0.25093	-0.15332	0.20543	-0.00167	0.38009
Q12A5	-0.24758	0.25540	0.29867	-0.03741	0.03446	0.05227	-0.29936	0.40481	-0.22495	0.31530	-0.07487	0.36043
Q12A7	-0.15164	0.19985	0.18512	-0.08618	-0.00462	0.02454	-0.20327	0.25385	-0.10569	0.20682	-0.08437	0.33254
Q12A8	-0.11052	0.56243	0.41619	-0.12705	-0.04686	0.07289	-0.31981	0.43346	-0.25210	0.35170	-0.11264	0.35245

TABLE C-3

CORRELATION COEFFICIENTS

	PRETEST		POSTTEST		RESIDUALS	
	MDI	PDI	MDI	PDI	MDI	PDI

	ADOPT	DADWORK	MARRIED	WOMACC	HEALTH	PAREDUC	HIGHRISK	DEVELDIS	MOTH	010CP1	315M2	012A1
012A11	-0.11563	0.26264	0.24394	-0.14746	-0.03384	0.09341	-0.27066	0.32178	-0.14170	0.31726	-0.01292	0.14659
012A12	-0.12313	0.30819	0.27146	-0.11750	-0.07325	0.06024	-0.40701	0.50070	-0.22159	0.42412	-0.14614	0.22336
012A13	0.26474	-0.31792	-0.32137	0.11917	0.08640	-0.05295	0.27166	-0.36548	0.23419	-0.36619	0.05112	-0.54251
DADNOHI	-0.01206	-0.01665	0.00870	0.15298	0.01514	0.00018	0.05419	-0.13921	0.17010	-0.11614	-0.04852	-0.18674
MOMNOHI	-0.07621	-0.18534	-0.20319	0.24735	0.03216	-0.12714	0.22685	-0.29175	0.14082	-0.30025	-0.02360	-0.15657
03AP2	0.30667	0.21529	0.16322	-0.23847	0.00112	0.00270	-0.13437	0.23942	-0.14054	0.15473	-0.01787	-0.01085
09BP2	0.31893	0.30936	0.31385	-0.20310	0.01297	0.01692	-0.22746	0.30962	-0.13479	0.29332	-0.09841	0.01248
021DP2	0.31390	0.27853	0.27695	-0.20606	-0.15543	0.18116	-0.21391	0.15054	0.10602	0.05965	-0.15042	0.00311
INTENSIT	0.24460	-0.08954	-0.09187	0.03731	0.05409	-0.04527	0.01846	-0.03861	0.07995	-0.13355	-0.14492	-0.04731
DURATION	-0.00870	0.10164	0.04449	0.07675	-0.02452	0.07316	-0.14622	0.10245	0.09229	-0.03353	-0.08046	0.02650
035	-0.08068	0.11552	0.08264	-0.04693	0.12541	-0.07208	-0.02473	0.03716	-0.07278	0.14247	0.05937	0.09306
015N5	-0.02608	0.00815	-0.05476	0.04276	0.00458	-0.13029	0.09575	-0.10416	0.04341	0.00804	0.21401	-0.03960
AGEAD	0.02409	0.04806	-0.01883	0.14760	-0.03010	-0.05309	-0.05426	0.00845	0.05759	0.02530	-0.01896	-0.06189
001P2	0.02155	0.04744	0.11487	-0.12993	0.04582	0.00248	-0.11369	0.14766	-0.02941	0.05112	-0.14294	0.06404
TEQHI	0.02494	0.02544	-0.01521	0.02158	-0.06304	0.07282	-0.07578	0.04073	0.01467	-0.04953	-0.09258	-0.02699
TEQM2	-0.04368	-0.01237	0.04497	-0.01134	-0.05853	-0.05521	-0.13935	-0.13283	-0.06266	0.04271	0.04867	0.03649

	012A2	012A3	012A5	012A7	012A8	012A11	012A12	012A13	DADNOHI	MOMNOHI	09AP2	09BP2
03AP3	532.	532.	540.	543.	534.	543.	550.	621.	621.	621.	460.	548.
03BP6	509.	504.	517.	520.	511.	517.	511.	594.	594.	594.	440.	529.
021CP3	313.	306.	310.	313.	311.	314.	327.	362.	362.	362.	284.	331.
021CP6	290.	284.	287.	291.	289.	297.	304.	334.	334.	334.	270.	315.
MDIRESID	304.	297.	300.	303.	302.	309.	317.	348.	348.	348.	275.	319.
PDIRESID	278.	272.	275.	279.	277.	284.	291.	322.	322.	322.	269.	302.
DUANS	705.	705.	721.	724.	707.	729.	743.	832.	832.	832.	612.	733.
01NP1	665.	665.	678.	681.	666.	686.	698.	768.	768.	768.	577.	688.
315	672.	674.	687.	690.	675.	695.	709.	784.	784.	784.	583.	699.
06	712.	709.	718.	721.	708.	726.	740.	823.	826.	826.	610.	731.
017	565.	569.	576.	580.	567.	582.	608.	662.	662.	662.	507.	595.
03DP2	697.	698.	712.	715.	698.	719.	733.	812.	812.	812.	604.	722.
ADOPT	705.	705.	721.	724.	707.	729.	743.	832.	832.	832.	612.	733.
DADWORK	705.	705.	721.	724.	707.	729.	743.	832.	832.	832.	612.	733.
MARRIED	705.	705.	721.	724.	707.	729.	743.	832.	832.	832.	612.	733.
WOMACC	705.	705.	721.	724.	707.	729.	743.	832.	832.	832.	612.	733.
HEALTH	705.	705.	721.	724.	707.	729.	743.	832.	832.	832.	612.	733.
PAREDUC	705.	705.	721.	724.	707.	729.	743.	832.	832.	832.	612.	733.
HIGHRISK	705.	705.	721.	724.	707.	729.	743.	832.	832.	832.	612.	733.
DEVELDIS	705.	705.	721.	724.	707.	729.	743.	832.	832.	832.	612.	733.
MOTH	705.	705.	721.	724.	707.	729.	743.	832.	832.	832.	612.	733.
010CP1	664.	665.	676.	678.	667.	684.	698.	764.	764.	764.	576.	685.
315M2	648.	643.	657.	659.	648.	665.	679.	755.	755.	755.	558.	663.

TABLE C-4

CORRELATION COEFFICIENTS

	PRETEST		POSTTEST		RESIDUALS	
	MDI	PDI	MDI	PDI	MDI	PDI

	012A2	012A3	012A5	012A7	012A8	012A11	012A12	012A13	DADNUMI	MOMNUMI	D4AP2	M4MP2
012A1	684.	675.	686.	689.	673.	685.	683.	702.	702.	702.	526.	635.
012A2	705.	640.	691.	698.	686.	693.	695.	705.	705.	705.	530.	642.
012A3	0.26360	705.	691.	696.	681.	688.	691.	705.	705.	705.	536.	638.
012A5	0.28079	0.38607	721.	713.	692.	703.	706.	721.	721.	721.	534.	650.
012A7	0.29202	0.28446	0.32573	724.	703.	707.	710.	724.	724.	724.	545.	650.
012A8	0.31680	0.34812	0.45354	0.28627	707.	695.	694.	707.	707.	707.	530.	639.
012A11	0.23954	0.12492	0.27615	0.10476	0.34906	729.	715.	729.	729.	729.	543.	661.
012A12	0.27150	0.24826	0.37076	0.22611	0.50610	0.14960	743.	743.	743.	743.	560.	675.
012A13	-0.53067	-0.51743	-0.47113	-0.45096	-0.67582	-0.46730	-0.62824	832.	832.	832.	612.	733.
DADNUMI	-0.13930	-0.14563	-0.16314	-0.12633	-0.20698	-0.11816	-0.12312	0.17235	832.	832.	612.	733.
MOMNUMI	-0.20273	-0.17095	-0.28948	-0.22023	-0.37190	-0.27470	-0.30397	0.28949	3.55458	832.	612.	733.
D4AP2	0.07138	0.30945	0.10940	0.06867	0.04167	0.06710	0.21941	-0.05759	-0.13449	-0.20570	612.	608.
M4MP2	0.08969	0.18597	0.15360	0.10525	0.24621	0.11337	0.32834	-0.10253	-0.10424	-0.24951	0.78321	733.
0210P4	0.00539	0.00379	-0.00894	-0.04503	0.01079	0.01406	0.05626	-0.00200	0.01906	0.02380	0.05401	0.04943
INTENSIT	-0.01167	-0.05021	-0.16171	-0.08436	-0.12199	-0.05337	-0.04431	0.00418	0.11251	0.11330	-0.01874	-0.04379
DURATION	-0.03485	-0.11797	-0.02726	-0.00647	-0.05552	-0.00154	-0.02567	-0.04297	-0.02642	0.02518	0.13461	0.10107
335	0.17530	0.10741	0.19344	0.05175	0.11701	0.14536	0.14533	-0.14521	-0.02439	-0.04122	0.03301	0.06718
01585	-0.02076	-0.03221	-0.06705	-0.11614	-0.07216	-0.09083	-0.09579	0.00623	0.01067	0.03706	-0.01931	-0.03469
AGEAD	-0.02394	-0.04031	-0.11554	-0.04743	-0.10530	-0.05412	0.01735	0.06147	0.04291	0.04117	0.06622	0.07489
D01P2	-0.03047	-0.02894	-0.00569	0.00111	0.04476	0.01094	0.01758	0.13818	-0.03158	-0.07423	0.11788	0.12093
TERM1	-0.04107	0.01206	-0.03414	-0.04200	0.01918	0.00554	0.01584	0.03355	0.03144	-0.01547	0.01507	0.07267
TERM2	0.04574	0.00033	0.04052	0.04356	0.03341	0.00000	0.00305	-0.06643	-0.02424	0.00633	-0.00110	-0.08260

	0218P4	INTENSIT	DURATION	335	01585	AGEAD	D01P2	TERM1	TERM2
04AP1	621.	621.	291.	599.	562.	547.	621.	621.	621.
0218P4	598.	598.	282.	574.	561.	521.	598.	598.	598.
04CP1	362.	362.	142.	350.	344.	314.	362.	362.	362.
04CP4	338.	338.	137.	329.	325.	297.	338.	338.	338.
M01MESID	348.	348.	136.	337.	333.	301.	348.	348.	348.
M01MFSID	322.	322.	132.	310.	307.	275.	322.	322.	322.
01585	832.	832.	404.	793.	777.	733.	832.	832.	832.
01P1	768.	768.	369.	724.	722.	680.	768.	768.	768.
016	784.	784.	373.	747.	716.	688.	784.	784.	784.
00	829.	829.	404.	792.	776.	731.	829.	829.	829.
017	662.	662.	309.	634.	618.	589.	662.	662.	662.
04CP2	812.	812.	391.	774.	759.	716.	812.	812.	812.
AGEAD	832.	832.	404.	793.	777.	733.	832.	832.	832.
D4DNUMI	832.	832.	404.	793.	777.	733.	832.	832.	832.
M4MP1D	832.	832.	404.	793.	777.	733.	832.	832.	832.
04AGE	832.	832.	404.	793.	777.	733.	832.	832.	832.
HEALTH	832.	832.	404.	793.	777.	733.	832.	832.	832.

TABLE C-5

CORRELATION COEFFICIENTS

	PRETEST		POSTTEST		RESIDUALS	
	MDI	PDI	MDI	PDI	MDI	PDI

	Q21AB4	INTENSIT	DURATION	Q35	Q13I5	AGEAD	DQ1P2	TERM1	TERM2
BAREPOR	832.	832.	404.	793.	777.	733.	832.	832.	832.
HIGHRISK	832.	832.	404.	793.	777.	733.	832.	832.	832.
DEVELOIS	832.	832.	404.	793.	777.	733.	832.	832.	832.
OOTH	832.	832.	404.	793.	777.	733.	832.	832.	832.
Q10CP1	764.	764.	369.	729.	715.	669.	764.	764.	764.
Q15I2	755.	755.	363.	720.	717.	669.	755.	755.	755.
Q12A1	702.	702.	339.	661.	660.	619.	702.	702.	702.
Q12A2	705.	705.	339.	664.	662.	622.	705.	705.	705.
Q12A3	705.	705.	334.	662.	659.	620.	705.	705.	705.
Q12A5	721.	721.	342.	680.	674.	634.	721.	721.	721.
Q12A7	724.	724.	343.	700.	676.	639.	724.	724.	724.
Q12A8	707.	707.	333.	684.	662.	624.	707.	707.	707.
Q12A11	729.	729.	347.	705.	682.	645.	729.	729.	729.
Q12A12	743.	743.	352.	718.	694.	655.	743.	743.	743.
Q12A13	832.	832.	404.	793.	777.	733.	832.	832.	832.
DSTROMI	832.	832.	404.	793.	777.	733.	832.	832.	832.
MUMROII	832.	832.	404.	793.	777.	733.	832.	832.	832.
Q9AP2	612.	612.	293.	567.	564.	534.	612.	612.	612.
Q9MP2	733.	733.	356.	702.	696.	647.	733.	733.	733.
Q21MB4	832.	832.	404.	793.	777.	733.	832.	832.	832.
INTENSIT	0.03174	832.	404.	793.	777.	733.	832.	832.	832.
DURATION	0.13704	0.05663	404.	387.	380.	354.	404.	404.	404.
Q35	-0.05445	-0.06157	-0.23617	793.	748.	693.	793.	793.	793.
Q13I5	-0.01160	-0.03721	-0.04206	0.14271	777.	688.	777.	777.	777.
AGEAD	0.18992	0.06815	-0.03094	-0.05694	0.02268	733.	733.	733.	733.
DQ1P2	-0.01694	-0.03701	0.10559	-0.00512	-0.23277	-0.10967	832.	832.	832.
TERM1	0.11261	0.10183	0.13735	-0.00096	0.00431	0.26210	0.04218	832.	832.
TERM2	-0.11052	-0.09037	-0.10943	0.08890	0.00440	-0.11896	-0.03141	-0.42562	832.

APPENDIX D

BAYLEY RESIDUAL GAIN SCORES

TABLE D-1

MULTIPLE REGRESSION

VARIABLE		MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
DOWNS	DOWN SYNDROME CHILD	0.35044	0.12281	0.12281	-0.35044	-0.[illegible]5444	-0.22817
BIT	INFANTS BIRTH WEIGHT	0.37134	0.13789	0.01509	-0.16579	-0.1477358	-0.10894
DADWORK	DAD EMPLOYED FULL TIME	0.38456	0.14790	0.01001	-0.15883	-0.1101043	-0.14388
MOMP2	MOTHERS AGE	0.38614	0.14906	0.00175	-0.10140	-0.[illegible]960-01	-0.01383
BIRTH	TOTAL # OF FAMILY PROBLEMS	0.41716	0.17655	0.04691	-0.17250	-0.[illegible]560-01	-0.23057
HIGHRISK	INFANT HIGH RISK	0.46598	0.21807	0.02012	0.20611	0.2266841	0.04435
DEVELDIS	INFANT DEVELOPMENTALLY DISABLED	0.46779	0.21883	0.00166	-0.17884	-0.[illegible]7230-01	-0.03350
TERM2	PROGRAMS AGE FROM DIRECTORS QUESTIONNAI	0.46846	0.21945	0.00112	-0.16201	-0.[illegible]960-01	-0.03963
TERM1	TERMINATED - REHABILITATED	0.53587	0.28715	0.06770	0.34035	[illegible]	0.23331
(CONSTANT)	TERMINATED - REACHED AGE LIMIT	0.54060	0.29225	0.00509	-0.21204	-0.[illegible]400	-0.07915
						1.[illegible]415	

Dependent Variable: MDI Residual Scores, all infants

TABLE D-2

MULTIPLE REGRESSION

VARIABLE		MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
DOWNS	DOWN SYNDROME CHILD	0.37975	0.14421	0.14421	-0.37975	-0.6193180	-0.22047
310CP1	FAMILY RECEIVING INCOME ASSISTANCE	0.39937	0.15949	0.01529	-0.39183	-0.2336550	-0.11156
000P2	MOTHERS AGE	0.40675	0.16545	0.00596	-0.20425	-0.5157950D-01	-0.05779
01245	CHILD NEGLECT	0.40892	0.16721	0.00176	-0.14655	-0.4501444D-01	-0.03398
01248	EXTENDED PERIODS OF UNEMPLOYMENT	0.41035	0.16836	0.00114	-0.18932	-0.1401435	-0.06319
HIGHRISK	INFANT HIGH RISK	0.41679	0.17371	0.00536	0.21492	0.2692159	0.12258
DEVCLDIS	INFANT DEVELOPMENTALLY DISABLED	0.41934	0.17585	0.00214	-0.19008	0.2387337	0.11918
AGEAD	AGE AT ADMISSION IN DAYS	0.45014	0.20263	0.02678	0.20557	0.7646503D-03	0.19404
D01P2	PROGRAM'S AGE FROM DIRECTORS QUESTIONNAI	0.46801	0.21903	0.01640	-0.22633	-0.4445381D-01	-0.13232
TERM2	TERMINATED - REHABILITATED	0.53942	0.29098	0.07195	0.29403	0.4526489	0.27906
(CONSTANT)						-0.1928754D-02	

Dependent Variable: PDI Residual Scores, All Infants

TABLE D-3

REGRESSION

VARIABLE		MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
G17	INFANTS BIRTH WEIGHT	0.21364	0.04534	0.04534	-0.21364	-0.17403278	-0.13656
G16	WAS INFANT FULL-TERM OR PREMATURE?	0.22426	0.05029	0.00491	0.19502	0.11830330	0.05421
G12A12	IMMATURE PRIMARY CAREGIVER	0.31666	0.10041	0.05012	0.28027	0.24869523	0.12484
G12A7	CHILD:SEXUAL ABUSE: SUSPECTED	0.33021	0.11304	0.01263	0.16582	0.19174566	0.09542
G12A5	CHILD NEGLECT	0.34560	0.11946	0.00654	0.14283	0.63772250-01	0.04042
G12A2	PSYCHIATRIC ILLNESS, MOTHER OR FATHER	0.34866	0.12154	0.00214	0.14964	0.26136710-01	0.01124
G12A13	TOTAL # OF FAMILY PROBLEMS	0.35214	0.12404	0.00242	-0.17257	-0.30177450-01	-0.07495
TERM2	TERMINATED - REHABILITATED	0.42820	0.18335	0.05931	0.29750	0.35071154	0.21855
TERM1	TERMINATED - REACHED AGE LIMIT	0.43154	0.18610	0.00275	-0.17934	-0.12200362	-0.06148
(CONSTANT)						-0.70249959	

Dependent Variable: MDI Residual Scores, High Risk Infants

TABLE D-4

REGRESSION

VARIABLE		MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
QICCP1	FAMILY RECEIVING INCOME ASSISTANCE	0.24819	0.06160	0.06160	-0.24819	-0.4852957	-0.24283
Q1SB2	MEDICAL REPORT FORM COMPLETED?	0.34888	0.12171	0.06012	-0.23690	-0.4732132	-0.21743
DACWORK	DAC EMPLOYED FULL TIME	0.36200	0.13104	0.00933	-0.23407	-0.1271766	-0.06414
INTENSIT	SESSIONS AT LEAST ONCE A WEEK	0.41088	0.17379	0.04274	0.29935	0.5405633	0.27252
TERM2	TERMINATED - REHABILITATED	0.61340	0.37626	0.20248	0.36258	1.161354	0.46128
(CONSTANT)						-0.7033457	

Dependent Variable: PDI Residual Scores, High Risk Infants

TABLE D-5

REGRESSION

VARIABLE		MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	F	BETA
DOWNS	DOWN SYNDROME CHILD	0.37539	0.14092	0.14092	-0.37539	-0.6981341	-0.29062
Q2!8P4	TOTAL NUMBER OF PROBLEMS	0.41935	0.17585	0.03494	-0.15607	-0.1092359	-0.15514
Q1586	MEDIATOR TRAINING PLAN COMPLETED?	0.44176	0.19515	0.01930	0.10462	0.1890043	0.08966
DADWORK	DAD EMPLOYED FULL TIME	0.45281	0.20504	0.00989	-0.16010	-0.1433906	-0.14554
Q98P2	MOTHERS AGE	0.45354	0.20570	0.00066	-0.15413	-0.1688716D-01	-0.02185
Q12A13	TOTAL # OF FAMILY PROBLEMS	0.49696	0.24697	0.04127	-0.20124	-0.7017277D-01	-0.17586
DGIP2	PROGRAM'S AGE FROM DIRECTORS QUESTIONNAI	0.50236	0.25286	0.00589	-0.23635	-0.5156045D-01	-0.08737
TERM2	TERMINATED - REHABILITATED	0.55183	0.30452	0.05165	0.31582	0.7538249	0.20409
TERM1	TERMINATED - REACHED AGE LIMIT	0.55639	0.30957	0.00505	-0.18567	-0.1571021	-0.07717
(CONSTANT)						1.083345	

Dependent Variable: MDI Residual Scores for Developmentally Delayed and both Developmentally Dayaled and High Risk Infants

TABLE D-6

REGRESSION

VARIABLE		MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
DOWNS	DOWN SYNDROME CHILD	0.40815	0.16662	0.16662	-0.40815	-0.3627350	-0.43428
Q6	INFANTS SEX	0.43118	0.18594	0.01930	-0.14695	-0.2332620	-0.11645
MOMCCC	MOM IS A HOUSEWIFE	0.44695	0.19976	0.01384	0.14966	0.1439335	0.07065
U12A8	EXTENDED PERIODS OF UNEMPLOYMENT	0.45495	0.20694	0.00722	-0.18524	-0.1277521	-0.19535
U9EP2	MOTHERS AGE	0.45995	0.21155	0.00458	-0.20635	-0.5231e450-01	-0.06772
U12A13	TOTAL # OF FAMILY PROBLEMS	0.47817	0.22865	0.01709	-0.05164	-0.5349y100-01	-0.14662
AGEAD	AGE AT ADMISSION IN DAYS	0.51451	0.26472	0.03607	0.20058	0.8177e460-03	0.20735
DC1P2	PROGRAM'S AGE FROM DIRECTORS QUESTIONNAI	0.52806	0.27885	0.01413	-0.27564	-0.7607e450-01	-0.12e93
TERM2	TERMINATED - REHABILITATED	0.55310	0.30592	0.02707	0.20442	0.e231124	0.16875
(CONSTANT)						1.241045	

Dependent Variable: PDI Residual Scores, Developmentally Delayed and Both Developmentally Delayed and High Risk Infants